

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 05 JUL 2005


PCT

Applicant's or agent's file reference XA 1760	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/GB2004/002105	International filing date (day/month/year) 17.05.2004	Priority date (day/month/year) 30.05.2003	
International Patent Classification (IPC) or national classification and IPC B64D45/02			
Applicant BAE SYSTEMS PLC et al.			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☐ sent to the applicant and to the International Bureau) a total of sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 21.12.2004	Date of completion of this report 30.06.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Telephone No. +49 89 2399- 8337 G. SALENTINY



**CORRECTED
VERSION**

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International application No.
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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-7 as originally filed

Claims, Numbers

1-10 as originally filed

Drawings, Sheets

1/1 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

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The following documents are referred to in this communication:

D1 : US 4 628 402 A (COVEY JAMES H) 9 December 1986 (1986-12-09)

D2 : US 4 789 918 A (BANNINK JR ENGBERT T) 6 December 1988 (1988-12-06)

Re Item V.

- 1 The prior art document D1 represents the closest prior art to the subject-matter of the independent claims 1 and 6. This document discloses a method for protecting a fastener of a composite structure against lightning strike together with the corresponding device. The disclosure of D1 teaches the skilled man to cover the fastener and an area immediately surrounding the fastener with a layer of dielectric material. A conductive layer extends over and covers the dielectric layer and the dielectric layer is used to electrically divert from a fastener an electric charge resulting from a lightning strike. D1 does however not disclose the extension of the insulating layer beyond the borders of the electrically conductive layer. The subject-matter of claims 1 and 6 is therefore novel (Article 33(2) PCT).
- 2 The problem to be solved by the present invention may be regarded as providing an improved and economic lightning protection system for fasteners in composite aircraft skin structures. By extending the insulating layer beyond the borders of the electrically conductive layer and by making the insulating layer adjacent the lateral edges of the conductive layer suitable for breaking down dielectrically before dielectric breakdown can occur in the insulating material separating the conductive layer and the bolt head, the following concept is achieved :
 - the lightning strike energy is dissipated through a conductive layer of limited extension *and*
 - in case the dissipation achieved therewith is not sufficiently rapid, dielectric breakdown in a region sufficiently distant from the fastener is promoted in order to ensure that arcing and sparking from the fastener cannot occur

Such a concept is not suggested in any of the lightning protection solutions disclosed in the prior art at hand. The solution proposed in claims 1 and 6 of the present application is thus also considered as involving an inventive step (Article 33(3) PCT).

- 3 Claims 2-5 are dependent on claim 1, claims 7-10 are dependent on claim 6. These claims do thereby also meet the requirements of the PCT with respect to

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novelty and inventive step.

Re Item VII.

- 1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein. The description shall address the features of the subject-matter of the independent claims which are known from these documents and shall clearly outline the differentiating features of the claimed subject-matter together with the significance thereof vis-à-vis the teachings of the prior art.
- 2 Independent claims 1 and 6 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art D1 being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- 3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).